On finitely generated quasi-scalar Jordan type algebras

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The concept of axial algebras was introduced by Hall, Rehren and Shpectorov. These algebras are commutative, non-associative, and are generated by idempotents. We focus on the class of axial algebras of Jordan type. It is well known that there is a unique bilinear form in algebras of Jordan type such that any axis has length 1. We say that an algebra A with bilinear form is scalar if the bilinear form defines an inner product on A. Quasi-scalarity is a useful generalization of this concept. We say that an axial algebra A of Jordan type is quasi-scalar if for any two axes $a, b \in A$ the equality $(a, b) = 1$ holds if and only if $a = b$. It is easy to show that scalar Jordan type algebras are quasi-scalar. We have studied the structure of quasi-scalar algebras. In particular, it was proved that a finitely generated quasi-scalar algebra has a finite dimension if and only if it is unital.